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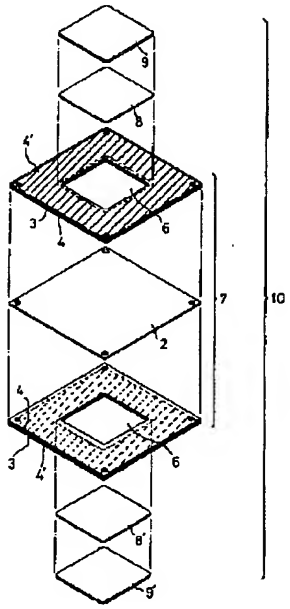
(54) ELECTROLYTE FILM, GAS SEAL STRUCTURE, AND STACK FOR SOLID POLYMER ELECTROLYTE TYPE FUEL CELL

(57) Abstract:

PROBLEM TO BE SOLVED: To ensure and simplify a gas seal, to enable reducing the numbers of part items and assembly man-hours and increasing operating efficiency, and to increase the dimensional accuracy of machining by enabling integration that eliminates the need for thermocompression.

SOLUTION: This electrolyte film comprises a solid polymer electrolyte film to one or both sides of which a glued polymer sheet 3 having an opening in its center is bonded, with the opening 6 in the glued polymer sheet 3 located inside the periphery of an electrode consisting of catalyst layers 8, 8 and a porous substrate 9. A gas seal structure comprises the electrolyte film or a gas seal structure with a lamination of carbon plates bonded to each side by an adhesive 4 or a sheet of adhesive 4'. The stack is laminated, and integrated together by the gas seal structure for a solid polymer electrolyte type fuel cell.



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(54) SOLID POLYMER ELECTROLYTIC FUEL CELL

(57) Abstract:

PROBLEM TO BE SOLVED: To provide a fuel cell which is easily assembled or replaced, and has high reliability, by using an electrolyte/electrode junction body which is formed by adhering catalyst layers to both sides of a polymeric electrolyte film, and thermo-compression-bonding porous electrode base material to them using cover sheet films.

SOLUTION: By adhering and forming a catalyst layer 4 on the central part of both sides of a square polymeric electrolyte film, an electrolyte/electrode junction body 3 is formed. On both sides of the junction body 3, porous electrode substrates 2 are placed on the catalyst layers 4. Then, the porous electrode base materials 2 are thermo-compression bonded using a cover sheet film 1 having a hot melt layer. The cover sheet film 1 consists of a substrate film and a hot melt layer, preferably has about 10-200 μm of thickness and about 20-80% of the rate of the hot melt layer, and is used by cutting off the part corresponding to the catalyst layer 4 at the central part. The thermo- compression-bonding is performed with hot rolling or hot press. Using the produced electrolyte/electrode junction body, a high reliable solid polymer electrolytic fuel cell is provided.